

NOTES ON LESSER ANTILLEAN FERNS. II

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Continuing studies on the Pteridophyte flora of the Lesser Antilles have revealed further taxonomic problems to be solved, and a few more undescribed populations of ferns which require names. The present paper is a sequel to one published in *Rhodora* in 1961 (vol. 63, pp. 31-35), and arises largely from studies made at the Harvard University herbaria during September and October, 1965, supported by a Mercer Research Grant from the Arnold Arboretum which is gratefully acknowledged.

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LYCOPODIACEAE

Lycopodium reflexum Lam. var. ***rigidum*** (J. F. Gmel.) Proctor, comb. nov., based on *Lycopodium rigidum* J. F. Gmel. in L., Syst. Nat. ed. 13, 2: 1289. 1791. This variety typically differs from var. *reflexum* in its more rigidly ascending leaves with less strongly denticulate margins (sometimes nearly entire), and in its slightly larger sporangia. It has usually been treated as a species distinct from *reflexum*, but considerable intergradation occurs, and I suspect that some of the differences may be due to the influence of varying growth-conditions; var. *rigidum* usually grows at relatively higher elevations in more exposed situations.

HYMENOPHYLLACEAE

Hymenophyllum hirtellum Swartz was not credited to the Lesser Antilles by Morton (Contr. U.S. Nat. Herb. 29: 164-165. 1947) in his treatment of the group to which this species belongs. Subsequently, Kramer (in Stoffers, Fl. Neth. Ant. 1: 19-20. 1962) attributed *H. hirtellum* to several Lesser Antillean islands. The material on which Kramer's records were based is apparently equivalent to *Hymenophyllum gratum* Fée, more recently (Brit. Fern

Gaz. 9: 73. 1962) reduced to varietal status under *H. hirsutum* by the present writer.

It must be conceded that *Hymenophyllum hirtellum* in its typical form is confined to the Greater Antilles. A closely related population occurring in Guatemala was assigned specific rank (*H. maxonii*) by Morton, and the Lesser Antilles material somewhat resembles that taxon, even to the occurrence of two rather well-marked varieties similar to those of *maxonii*. However, the Lesser Antilles plants differ from their Guatemalan counterparts in subtle differences of texture, particularly in the somewhat coarser hairs on the fronds, and the wide geographic disjunction suggests that the two populations evolved separately, perhaps from the same stock as the present Greater Antillean *hirtellum*.

In assigning names to the Lesser Antilles material, several alternative courses are possible. One of these is to recognize the species *H. gratum* Fée, and then to subdivide this into two varieties. Objections to this course are the apparent intergradation toward typical *H. hirtellum* shown by certain specimens, and the difficulty of clearly distinguishing *gratum* from *maxonii* on a morphological basis. Another course is to relate *gratum* directly with *maxonii*, but this is objectionable on phyletic grounds. The course adopted is to regard the Lesser Antilles populations as geographic varieties of *H. hirtellum*.

Hymenophyllum hirtellum Swartz, var. **gratum** (Fée) Proctor, comb. nov., based on *H. gratum* Fée, Mém. Foug. 11: 118, t.30, f1, 1866. *H. hirsutum* var. *gratum* (Fée) Proctor in Brit. Fern Gaz. 9: 73. 1962. The assignment of this taxon as a variety under *H. hirsutum* was due to the close resemblance of some forms to that species, but the very much larger size and convergence with *H. hirtellum* now suggests that the latter species probably has a closer relationship.

Hymenophyllum hirtellum var. **vincentinum** Proctor, a varietate typica frondibus laxe pendentibus, laminis linearibus vel lanceo-linearibus, ad 27 cm. longis, plerumque 3-4.5 cm. latis (raro ad 6 cm.); stipitibus peranguste marginatis, non alatis, soris 1.2 mm. latis non excedentibus differt.

TYPE from southeast slopes of the Soufrière volcano, St. Vincent,

in mossy woodland (*Proctor 25987*, IJ, isotypes A, U, USF), collected 26 Feb. 1965.

Numerous other specimens of this entity have been seen from St. Vincent, where the population is quite uniform and distinct. It is connected with var. *gratum*, however, by intermediate forms occurring especially in St. Lucia, but also from several other islands.

POLYPODIACEAE

Diplazium legalloi Proctor, sp. nov. *Asplenium callipteris* sensu W. Hook. & Bak., Syn. Fil. 231. 1867, in part; Duss, Foug. & Lyc. Ant. Fr. 85. 1903, not *Diplazium callipteris* Fée, 1852.

Rhizoma erectum, apice squamis pallide brunneis, ovatis, lacerato-fimbriatis vestitum. Frondes ad 1.7 m. longae, vel ultra, crassae, coriaceae. Stipites ad 60 cm. longi, alte sulcati, basin versus squamati, sparse appresseque arachnoidei. Laminae ovato-oblongae saepius plus quam 1 m. longae, ad 60 cm. latae; rhachis alte sulcata in partem superiorem. Pinnae 9-11 pares, lanceo-oblongae, 12-30 cm. longae, 5-10 cm. latae, inferiores breve stipitatae, apicibus acutis vel subfalcatis, marginibus subintegris vel sinuato-crenatis (raro late truncatolobatis); atro-virides, supra glabrae, infra sparse appresso-pilosae. Venae prominulae, in fasciculis, pinnato-ramosae, curvato-conniventes ad margines subcartilaginei. Sori elongati, ad 3 cm. longi; indusium augustum, atrobrunneum, lacerato-ciliolatum.

TYPE from the vicinity of Ravine Chaude, above Matouba, Guadeloupe (*Proctor 20164*, A, isotype IJ), collected Nov. 26, 1959, in the company of Père C. LeGallo, for whom the species is named.

Père LeGallo, for many years stationed at the Roman Catholic church of Vieux Fort, Guadeloupe, has a wide botanical knowledge of this and other islands, has collected extensively (especially mosses), and is a worthy member of the long and distinguished line of French priest-botanists who (beginning with Charles Plumier) have contributed much to our knowledge of Antillean plants.

The species now described as *Diplazium legalloi* has long been known as *D. callipteris* Fée. The latter name, however, was based on *Linden 233* (ascribed by Fée to Cuba in error), which originated in Venezuela and represents the plant known by the earlier name *D. celtidifolium* Kunze. Fée himself misidentified the Guadeloupe plant in his treatise on Antillean ferns (1866), as his illustration (*t.10, f.2*) makes clear. *D. legalloi* differs from *D. celtidifolium* in its

usually wider pinnae of a different shape and texture, in the longer sori with lacerate-ciliolate (instead of entire) indusium, and in other details.

Diplazium limbatum (Willd.) Proctor, comb. nov., based on *Asplenium limbatum* Willd. in L., Sp. Pl. 5: 310. 1810, *Asplenium marginatum* L., Sp. Pl. 2: 1082. 1753; *Hemidictyum marginatum* (L.) K. B. Presl; *Diplazium marginatum* (L.) Diels, not Blume, 1828.

There are no convincing characters by which *Hemidictyum* can be maintained as distinct from *Diplazium*, but under the latter genus a different specific epithet is necessary.

Elaphoglossum petiolatum (Swartz) Urban, var. **dussii** (Underw. ex Maxon) Proctor, comb. nov., based on *Elaphoglossum dussii* Underw. ex Maxon, Pter. Porto Rico 398. 1926.

Grammitis phlegmaria (J. Sm.) Proctor, comb. nov., based on *Polypodium phlegmaria* J. Sm. in London Jour. Bot. 1: 194. 1842.

Grammitis phlegmaria var. **antillensis** Proctor, var. nov. *Polypodium flabelliforme* sensu Griseb., Fl. Br. W.I. 700. 1864, not Poir. in Lam., 1804.

A varietate typica in segmentis angustioribus oblongibusque, marginibus subintegris (non pergibbosis et sinuato-crenulatis), rhizomatis squamis latioribus clathratoribus, griseo-brunneis (non luteo-brunneis) differt.

TYPE from along Trace Victor Hugues near Grande Découverte, Guadeloupe (*Proctor 20307*, IJ), collected Dec. 8, 1959. Known also from Dominica, Martinique, St. Vincent, and Grenada. Typical *G. phlegmaria* is chiefly a plant of northern South America. True *Polypodium flabelliforme* is an older name for *P. rigescens* Bory ex Willd., and originated from the island of Réunion.

Grammitis stipitata Proctor, sp. nov.

Subg. *Melanoloma*. Rhizoma breve, decumbens vel erectum; squamae attenuati-deltatae, ad 3 mm. longae, ochraceo-brunneae, subclathratae. Frondes fasciculatae, in textura firmae, longe stipitatae; stipites 4-6 cm. longi, sursum anguste marginati, hirtelli in toto, pilis brevibus, patentibus, pluricellularibus. Laminae anguste lanceo-lineares vel lanceatae, 8.5-14 cm. longae, ad 1.3 cm. latae infra medium, ad apicem anguste acutae, ad basim cuneatae, nervo primario infra et marginibus atro-scleroticis sparse hirtellis sicut in stipite. Venae plus minusve 1-2-furcatae, liberae vel paucae ad apices conjunctae, margines non attingentes; sporangia glabra.

TYPE from Guadeloupe without definite locality (*E. A. Marie 6*, P, isotypes BM, IJ, NY).

Although known only from the type collection, this species appears to be absolutely distinct. Copeland (in Phil.

Jour. Sci. 80: 258. 1952) mentioned it merely "as an abnormal form of *G. limbata*", but it clearly differs from the latter in its larger, long-stipitate fronds, forked and occasionally anastomosing veins, and hispidulous margins. It seems much more nearly related to *G. marginella*, but aside from the elongate stipes, the fertile veinlets are not prolonged beyond the sori as they are in that species.

Thelypteris consimilis (Fée ex Bak.) Proctor, comb. nov., based on *Gymnogramma gracilis* "β, *G. consimilis*" Fée ex Bak. in W. Hook. & Bak., Syn. Fil. 377. 1868. *Dryopteris consimilis* (Fée ex Bak.) C. Chr., 1907, as to name. *D. mollicella* Maxon in Proc. Biol. Soc. Wash. 36: 49. 1923. TYPE from Guadeloupe, *L'Herminier*.

It has been customary to place the name *consimilis* in the synonymy of *Thelypteris gracilis*, but in the present writer's opinion these are distinctly different species, as shown particularly by the structure of the hairs. No material of true *T. gracilis* has been seen from the Lesser Antilles.

It should be noted that in Morton's recent treatment of West Indian *Thelypteris* with "red" glands (in Amer. Fern Jour. 53: 57-70. 1963), this species was omitted. In his key, it would come out to *T. piedrensis*, from which it differs in shape of pinnae and especially in having the lower surfaces rather densely puberulous with hamate hairs; in *T. piedrensis*, underside hairs are practically confined to the vascular parts, and are coarser and always acicular. The latter species is apparently known only from Cuba and Puerto Rico, according to available records.

Thelypteris cooleyi Proctor, sp. nov.

Subg. *Thelypteris*. Rhizoma erectum, 0.4-1 cm. crassum, ad apicem squamis numerosis, lucidis, brunneis, lanceo-attenuatis, minute glandulosis vestitum. Frondes fasciculatae, in textura elasticae. Stipites comparate perbreves, 1.5-5 cm. longi, minute stipitato-glandulosi, cetera glabri. Laminae oblanceatae, 20-75 cm. longae, 7-15 cm. latae, acuminatae, deorsum longi-attenuatae, pinnis infimis distantibus, auriculiformibus; rhachis straminea, pars superior bifariam minuteque incurvo-puberula, cetera glabra. Pinnae plerumque 25-35 pares, oppositae, anguste lanceo-lineares, subaequilaterales, ad basin sessiles 5-15 mm. latae (pinna aerophora parvo, conico subtenta), ad apicem attenuato-falcatae, alte pinnatifidae, glabrae. Segmenta subobliqua, deltato-oblonga, plerumque ad basin 2-3 mm. lata, acuta; segmentum infimum acroscopicum pinnae plerumque dilatatum, ovatum, rhachidem excessum, venis furcatis et marginibus serratis; venae segmen-

torum plerumque in paribus 4-6, simplices; margines segmentorum fertiliū plerumque revolutae, soros in parte obscurantes. Sori submarginales; indusium rotundato-reniforme, ca. 0.8 mm. latum, rufo-brunneum, minute stipitato-glandulosum, persistens; sporangia glabra.

TYPE from outer slopes and rim of the Soufrière crater, St. Vincent (*Proctor 26008*, IJ, isotypes A, U, US, USF), collected 26 Feb. 1965 in company with Mr. George R. Cooley, for whom the species is named in recognition of his contributions to West Indian botany. Paratypes (all from St. Vincent) *Cooley 8214, 8417, 8445, and 8591*; also *Proctor 25985*.

Thelypteris cooleyi is closely related to *T. limbata* (Sw.) Proctor, but differs from the latter in its narrower fronds always of clearly definite growth, in its glandular rhizome-scales whose cells are smaller and less transparently clathrate, in its entire ultimate segments, with the sori not located on teeth, and in its much paler indusium. Further, the tissues of *T. limbata* are characteristically beset with reddish or yellowish, sessile, resinous glands on the underside, while such glands are entirely absent from *T. cooleyi*.

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